COMMUNICATION NETWORK AND METHOD THEREIN

TECHNICAL FIELD

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The invention is concerned with a communication network and a method therein for invoking services to one or more terminals from at least two service entities. The invention is also concerned with a terminal and a an assembler unit to be used in the communication network.

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BACKGROUND ART

Network support of conventional end user services (e.g. telephony) of today are

15 mostly monolithically packaged to be invoked from a user terminal from a servoce entity belonging to one service provider.

In a de-regulated market, which is the trend of today, the traditionally bundled, packaged network support of end-user services may be decomposed into

20 constituting sub-components when the packaged services from a particurar service provider are not used. Each of these constituting components may then be offered separately to the end-users by several different service providers, allowing the end-user to choose with whom to establish a business relation and thereby be allowed to invoke the individual service component. One service provider may also have many

25 instances, service entities, of the same service component, e.g. geographically distributed. The end-user may also choose between the different service entities.

For example, in a multimedia conversation, individual service components, such as a conference unit, a transcoder, an encryption service, a multiplexer, etc. may be

30 required and the end-user may invoke each of these from his terminal, as e.g. were they end-points in a conference.

Such a procedure would however have some drawbacks, e.g. result in a heavy signalling load, which in case of a cellular link has a high price in terms of spectrum cost. For a cellular operator, even savings in terms of single percentages counts, which is why signalling should be decreased if a cellular transport is used.

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Furthermore, the terminal control logic complexity is increased in such an procedure, which also is adrawback.

The existing telecommunication networks, such as ISDN or GSM, use network
10 based call control entity, not terminal based call control. In an IP-network, terminal based call control is an option.

Prior art methods exist which are meant to decrease signaling when invoking services. In the European Patent Application EP 0 762 789 A2, a netweork based
15 agent performs complex signaling functions related to call processing on behalf of an associated mobile terminal, thus reducing the amount of signaling traffic that must travel over the valuable ait interface.

Also agencies for establishing and maintaining desired Quality of Service (QoS) in
20 wired systems are known. Such an architecture is described in the article "QoS Agency: An agent based Architecture for supporting Quality of service in Distributed Multimedia Systems" by L.A. guedes et al, 1997 IEEE Conference on Protocols for Multimedia Systems-Multimedia Networking PROMS-MnNet (Cat. No 97TB100116) p. 204-12, ISBN 0818679166, 24-27 Nov. 1997.

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An object of the invention is to give more freedom of choice for a terminal with respect to decisions about how services or service components implemented in a service entity, are controlled, e.g. how the terminal invokes services and service components and to realize this without a complex terminal control logic.

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An object of the invention is also to decrease the overall signaling load in the network.

SUMMARY OF THE INVENTION

The method of the invention is performed in a communication network for invoking services, wherein the communication network comprises at least one or more terminals and at least two service entities. It is deduced at the terminal, by e.g. its control logic, what support and what service components that are necessary for providing a given end-user service. The terminal has in an unspecified manner identified service entities in the network which can provide the service component required. The terminal then constructs configuration requests, each of which is associated with one or more specific service entities for invoking individual service components composing a service. Each configuration request is forwarded from the terminal to the service entity/entities indirectly, by using a special network support function for configuring service entities – the assembler unit of the invention - or directly in a way, which is chosen in accordance with pre-defined criteria.

The communication network and the terminal of the invention has means for performing the method of the invention. Especially, it is mentioned that the terminal can decide the way for forwarding each configuration request in accordance with the pre-defined criteria, in other words it can choose in which extent it desires to use netwotk support in the configuration and distribution of the service requests and it can also decide not to use network support at all.

The assembler unit of the invention is characterised by means for handling the configuration request(s) sent from a terminal in the communication network, each of them associated with one or more specific service entities for invoking individual service components.

The means for handling the configuration request(s) preferably consist of means to analyse and distribute the set of configuration requests accordingly to the service entities in a way chosen by the terminal.

Another preferred embodiment of the assembler unit is that the means for handling the configuration requests consist of means to distribute the requests to the service entities in a way influenced at least partly by the assembler unit. Then these means to forward the requests to the service entities in a way chosen at least partly by the

5   assembler unit can comprise means to analyse at least one of the requests sent by the terminal and means to send the least one of the configuration requests via a further assembler unit in the communication network to the service entities. The terminal might for example give alternatives for the assembler to use some of the service components and the assembler might make its decision about which of the

10   service components to choose based on a geographical analysis.

Other advantageous embodiments of the invention is presented in the subclaims.

Thus, a unit is introduced in the network giving support in that it can act on the

15   behalf of the terminal and which, on its explicit request, invokes other service entities as requested on a case-by case principle.   This unit, here called an assembler unit, receives request from the user terminal. The assembler unit analyses the request and distributes individual configuration requests to the service units in question.

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It is, however, the terminal that primarily decides the service components needed for a given service. The terminal has thus more control over decisions of which service components and which service entity (one or more) to invoke for a given service. If the terminal finds it convenient, it uses the service unit for one or more, usually all of

25   the configuration requests. This decision made by the terminal takes place in accordance with pre-defined critera, which might depend on geographical position, price, available equipment, signalling amounts, spectrum allocation and desired performance/cha-racteristics.

30   As was mentioned above, the analysis of which service components that are needed to get a complete end-user service is primarily performed at the terminal. When the terminal decides to use the assembler unit for support in configuring the

individual service componetns, the service entity analyses the service configuration request and distributes them to the different service entities.

The assembler unit might only act on behalf of the terminal without any own intelligence. Alternatively, it may have some intelligent functions e.g. in the composing of the service by and in deciding how to distribute the requests. It might consider the need for assembling at least part of the requests in the set of request and use some further service unit to forward them. It might even have means for reporting the outcome of the terminal's original request.

The invention focuses on terminal control. It is terminal control logic which analyses the need of service components on a case-by-case principle and, if network support from an assembler unit is needed for comfiguring and distributing the servgice components.

By placing more control in the terminal, solutions providing more user control are facilitated. The invention both allows for a solution in which the best of the available service components to be used in implementing the session on a case-by-case principle with respect to decreasing spectrum cost, total service configuration time as well as lowering terminal complexity. Furtherrmore, signalling over the air interface can be decreased.

The basic underlying principle is to have the simplest possible procedure possible. Recognizing that in most situations, the terminals will no require any other network support than a transport, the invention provides a mechanism in which the terminal chooses to require support to configure service entities in the network, in *the situations where these are needed*. Then and only then are these support entities invoked. The benefit is simplicity- only invoke the more complex network support entities when needed.

The invention also allows the end-user to directly establish a business relation with individual service component providing operators, while at service invocation let a 3rd party support in assembling the different services, e.g. to a multimedia service. Introducing an assembler unit also opens up for new roles for operators which runs

5   the assembly service without having to own the service entities it interacts with.

FIGURES

10   Figure 1 shows the architecture and method principle in the existing solution to invoke services from several service entities.

Figure 2 shows the architecture and method principle in the invention to invoke services from several service entities.

Figure 3 shows a detailed signalling example showing the overall principle for
15   configuring and invoking services in the existing solution.

Figure 4 shows a detailed signalling example showing the overall principle for configuring and invoking services in the invention.

Figure 5 shows another detailed signalling example showing the overall principle for configuring and invoking services in the invention.
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DETAILED DESCRIPTION

Some examples of embodiments of the inevntion are presented in the following,
25   which are not menat to restrict the invention. In these exasmples, most of the intelligence and the decisions are made in the terminal, but as has been indicated easrlier in the text, the assembler might be given more intelligence and it might make a part of the decisions with respect to distributing and composing the service for the terminal. The terminal might also decide not to use the assembler unit as
30   support for invoking the desired service.

In the architecture of figure 1, which is used in existing prior art solutions when a terminal can use several service entities or servic eproviders for invoking services, the telecommunication network 1 comprises a terminal 2, another terminal 3, a router 4 for routing IP packets sent by the terminals to the right end-point, and

5   several service entities (service providing entities) A, B, C and D. The cellular link layer is indicated with 5, which gives the functionality for the terminals to communicate over radio waves.

When the terminal 2 wishes to invoke services from the different service entities

10   A,B,C and D, it sends a separate message to each one of them as indicated by the dotted lines A', B', C' and D'.

The architecture of figure 2, used in the invention, the telecommunication network 1' comprises, in addition to the components in figure 1, i.e. 2, 3,4, 5, A, B, C, and D, an

15   assembler support G. When the terminal 2 wishes to invoke services from several service entities, it makes a decision whether to send the service component requests composing the service as in figure 1 or as in figure 2. In figure 2 it first send the set of requests to the service support 6 as indicated by the straight line G'. The assembler unit G disassembles the request in its constituent requests a,b,c,d

20   and forwards them to the service entities A,B,C and D.

Figure 3 shows a detailed signalling example showing the overall principle for configuring and invoking services in the existing solution. Terminal A locates possible service entities via some unspecified mechanism known in the art. A

25   negotiation is performed with each about the right to invoke the service provided at a later stage. The signalling messages for requesting the service from each entities A, B and C are indicated with steps 1, 3 and 5 respectively and the messages from the service entities A, B and C telling that the requests are granted are indicated with steps 2, 4 and 6 respectively.

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Figure 4 shows a detailed signalling example showing the overall principle for configuring and invoking services in the invention. In this signalling example, the B-

terminal invites A to a session in step 1'. A determines that it requires support from service entities A and B, each providing a supporting service for the invited session. A also chooses to use the assembler unit as network support in coordinating the configuration. A therefore requests the assembler unit in step 2' to coordinate the

5   configuration. The assembler unit invokes the desired services from the service entities in question in steps 3' and 5', the services being granted in steps 4' and 6'. In step 7', the granted services are informed to A and the session is started in step 8'.

10   Figure 5 shows another detailed signaling example showing the overall principle for configuring and invoking services in the invention. It is assumed that two users shall communicate. During the initial session signaling, it is discovered that there is a need for a transcoding service since the two speech coders in the terminals are not compatible. It is also discovered that since one of the terminals uses a cellular

15   access, it wishes some of the data to be compressed and irrelevant information filtered away.

Thus, to complete the service, there is a need for a transcoding service component and a compression/filtering service component in addition to the transport services.

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It is assumed that A invites B to a session and A determines the need for a transcoding service and a filtering service. A has previously located such service components and agreed with the service entity that he may use them. A send a request to the assembler unit to configure these two service components as well,

25   i.e. the transcoder and the filter. The assembler unit performs the configuration and acknowledges this to A. A responds to B and the session may start.

This is presented in detail in figure 5, in which B invites A to an audio session in step 1. A determines that he wishes to respond with audio and visual information exchange where the image is stored in a separate server. A also determines that he

30   requires a filtering optimization device for the visual data stream due to the cost of the cellular access and a transcoding service for the audio data stream since the

codecs in the two terminals are not compatible. In step 2, A requests the assembler unit to configure the transcoding service and the filtering/compressing service but also and end-point in which images to be exchanged between A and B is stored. In step 3, the assembler unit requests filtering/compressing from a filtering/compressing service component, and gets the filtering/compressing in step 4. In step 5, the assembler unit requests the transcoding from a transcoding service component and gets the transcoding in step 6. An image storage server is contacted by the assembler unit in step 7, the service of which is received in step 8. The assembler unit then configures the two service components and the image storage end-pont and aknowledges this to A in step 9. A then responds to B in step 10 and the session starts.

The data phase is indicated by the bold arrows. The upper arrows indicates that a transcoding component is needed as an inter-working function between the terminals to convert between cellular coded speech and non-cellular coded speech. The lower arrows indicates that filtering and compressing as well as image storing takes place between the two terminals.